

Joint guidance on performing CT
colonography in the early recovery phase of
Covid-19 pandemic

British Society of Gastrointestinal and Abdominal
Radiology & Society of Radiographers

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Agreed principles by the joint guidance group:

- 1. CTC is not currently a PHE-designated Aerosol-Generating Procedure (AGP) but more research is needed.**
- 2. The PPE requirement for performing CTC is a surgical fluid repellent mask, eye protection (visor or goggles), gloves, and an apron (or gown).**
- 3. There is no specific requirement for pre-test RT-PCR testing for patients scheduled for CTC.**
- 4. There is no mandate for routine “deep cleaning” of the CT scanner in between cases on a list.**
- 5. Local referral pathways and investigation criteria should be agreed with all relevant specialities. CTC capacity must be clearly defined and included in pathway design to avoid overwhelming already stretched services.**

Background

In the early and acceleration phases of Covid-19, standard CT of the abdomen and pelvis without gas insufflation or bowel preparation was prioritised over CT colonography (CTC) for the investigation of patients with symptoms suggestive of colorectal cancer (CRC). The rationale for this is detailed in our previous guidance.

<https://www.bsgar.org/society/covid-19-and-bsgar-updates-1/covid-19-and-bsgar-update-archive/>

Subsequently, updated BSGAR guidance was published, encouraging radiology departments to evaluate services at a local level, aiming to restart CTC services given the superiority of CTC over standard CT for CRC diagnosis, albeit at reduced capacity given the increased requirements for infection control and appropriate personal protection equipment (PPE)

<https://www.bsgar.org/society/covid-19-and-bsgar-updates-1/>

This joint document between BSGAR, the Society of Radiographers (SoR), CT Leads Special Interest Group (CTLSIG) and the GI Radiographers Special Interest Group (GIRSIG), offers guidance and advice on how best to perform CTC whilst maintaining safe systems of work during the current Covid-19 epidemic and during the recovery phase. The guidance is intended to highlight best practice and standardise processes for service delivery. As with all guidance, it should be considered in conjunction with local policies and procedures and interpreted for local use. Departments should develop their own systems of work in liaison

with relevant professional groups, notably local infectious disease and virology teams and pharmacy leads. These guidelines should be implemented in conjunction with the updated 2020 BSGAR CTC Standards and the SoR National Best Practice Guidelines for the CT Colonography Service.

[https://www.bsgar.org./static/uploads/Draft%202020%20BSGAR%20CT%20colonography%20standards%20\(March%202020\).pdf](https://www.bsgar.org./static/uploads/Draft%202020%20BSGAR%20CT%20colonography%20standards%20(March%202020).pdf)

<https://www.sor.org/learning/document-library/national-best-practice-guidelines-ct-colonography-service?autologout=1>

Referral processes

NHS England and NHS Improvement have published a clinical guide for triaging patients with suspected colorectal cancer Local referral pathways and investigation criteria should be agreed with all relevant specialities, and consideration of CTC capacity must be included in pathway design to avoid overwhelming services.

<https://www.bsgar.org/static/uploads/PUBLICATION%20C0384 %20Clinical%20guide%20for%20triaging%20suspected%20colorectal%20ca%20v1%20April%2024.pdf>

CTC capacity

Local CTC capacity should be modelled prior to accepting referrals and reinstating scanning. This will need to take account of each of the following; specialist trained staff to perform the procedure, specialists to report CTC, and scanner accessibility. Scan times will increase as a result of new infection control procedures, which will diminish capacity. It is expected that, at least initially, 45-60 minutes will be required to perform a CTC if the described procedures are followed; this time may reduce as teams become more familiar with new working practices.

Protecting patients and staff

Covid-19 RNA is excreted in faeces at the time of infection and may persist for at least 2 weeks after respiratory samples become negative. However, it is unknown if these later positive faecal samples contain viable, infectious virus; inactivated virus bound to antibody; or non-viable viral nucleic acid. Even so, CT colonography should not be performed in known or suspected Covid-19 patients, nor in those recently recovered from the infection(within 21 days of recovery). Patients should be telephone screened at the time of booking, and ideally

again prior to starting CTC preparation, and given clear guidance on what to do if they develop symptoms of Covid-19.

Symptoms of Covid-19

Classical

- **Fever of >37.5**
- **New persistent cough**
- **Myalgia**
- **Difficulty in breathing**
- **Loss of taste or smell**

Gastrointestinal

- **Nausea (vomiting)**
- **Diarrhoea**

Atypical ('elderly')

- **Confusion**
- **Reduced mobility**

It is essential that all patients inform the radiology department if they need to enter self-isolation in the period between referral and the CTC examination being performed. If they commence self-isolation due to having symptoms of Covid-19 or because of living with a household member with Covid-19 symptoms the examination should be deferred until 21 days after complete recovery or 21 days after initiating self-isolation (whichever is longer).

- Notification prior to booking: the examination should be deferred until recovery
- Notification between referral and scan date: the patient should not to take their preparation and must contact the department to rebook the examination when recovered.
- Notification while taking preparation before CTC: the patient must contact the radiology department and stop taking any further preparation.

Patient screening with viral PCR swab tests, either within 48 hours of the procedure or as point of care testing the day of the procedure, is being developed for some high risk and AGPs (biopsies, drainages and vascular studies). CTC however is not currently a PHE-designated AGP and we recommend this is handled as all other non-interventional cross-sectional studies following local operating procedures, which may include temperature checking and symptom questionnaires. If local guidelines recommend swab testing prior to CTC, these should be followed as appropriate.

<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-ppe#ppe-guidance-by-healthcare-context>

Currently, the prevalence of Covid-19 in the community has considerable national variation and is not known with certainty. However, many departments performing outpatient diagnostic CT scans that include the chest will recognise that, during the peak of community transmission, “incidental” Covid-19 changes were common on scans performed for other reasons, whereas presently this is rare. Local audit data from two London centres currently performing CTC have found no cases of incidental Covid-19 lung base pulmonary changes in the last 50 patients to be scanned. Chest CT should not be performed for Covid-19 screening prior to CTC.

Patient preparation and Medication Collection

To avoid the infection risks of additional patient hospital attendance, ideally this visit should be a telephone consultation and after discussion with local pharmacy teams, systems should be put in place to either post or deliver the CTC preparation to the patient at home. Clear written guidance about taking the preparation should be provided to the patient. Local procedures will determine what is appropriate. This should include department contact details in case they have concerns or questions

General Scanning Considerations

Written consent is required for BCSP patients, and recommended by BSGAR for all patients.

The usual processes for supporting patients’ privacy and dignity apply:

- Dignity underwear / shorts should be worn if available.
- A chaperone should be available if required when inserting and removing the rectal tube.

Personal protective equipment

Currently upper gastro-intestinal endoscopy where there is open suctioning of the upper respiratory tract is considered an AGP by PHE, however like colonoscopy, CTC is not. Colonoscopy is considered to be a lower risk procedure and the BSG recommend level 1 personal protection equipment (PPE) in patients without known or suspected Covid-19.

<https://www.bsg.org.uk/covid-19-advice/bsg-guidance-on-recommencing-gi-endoscopy-in-the-deceleration-early-recovery-phases-of-the-covid-19-pandemic/>

There is a paucity of evidence assessing whether CTC is an AGP and further research is needed. However, any risk is likely reduced compared to that of lower GI endoscopy. Venting of CO₂ from automated insufflators is potentially aerosol-generating, but most automated insufflators include anti-bacterial and anti-viral filters, with some manufactures claiming viral protection of > 99.99%. Emerging evidence from Italy reports low transmission rates from staff to patients and patients to staff using droplet PPE for low risk procedures, which included lower GI endoscopy in patients without current symptoms suggesting Covid-19 infection.

<https://gut.bmj.com/content/early/2020/04/22/gutjnl-2020-321341>

Staff providing or supporting any CTC procedure will need to use appropriate personal protective equipment (PPE) according to current PHE guidance. This will also reduce patients' risk of nosocomial infection. As CTC is currently not designated an AGP by PHE, level 1 PPE is required with the addition of eye protection given the above comments:

- Reusable wipe-clean visor/goggles
- Fluid resistant surgical mask (FRSM)
- Plastic apron
- Single or double gloves. Double gloving is encouraged to avoid touching the patient and then door handles etc.

Consideration should be given to:

- Long sleeved gown or additional forearm washing
- Wearing of hospital laundered scrubs
- Wipeable shoes with a sealed toe (theatre clogs)

https://www.rcr.ac.uk/sites/default/files/radiology_ppe_poster_a3.pdf

<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/updates-to-the-infection-prevention-and-control-guidance-for-covid-19>

Aprons and gloves are subject to single use as per Standard Infection Control Precautions (SICPs), with disposal and hand hygiene after each patient contact. Respirators, fluid-resistant (Type IIR) surgical masks, eye protection and disposable fluid repellent coveralls or long-

sleeved disposable fluid repellent gowns can be subject to single sessional use in circumstances outlined in Table 1 Covid-19 Infection prevention and control.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/881489/COVID-19_Infection_prevention_and_control_guidance_complete.pdf

A surgical mask for the patient should be strongly considered if not already being worn.

The risk of virus entering the control room is balanced with the risk of taking it into an adjacent hospital corridor, depending where operators choose to wait during scan acquisition (referred to as the “*demarcated area outside scan room*” in the example SOP below; this should be assessed locally by department leads and infection control. It is highly dependent on the design of the CT scanning suite, and as such must be agreed locally.

The minimum number of people should be involved in the procedure, while assuring patient and staff safety.

Scanning Protocol

Local scanning protocols should be clearly defined in a Standard Operating Procedure (SOP) and circulated to staff in advance of commencing CTC services. Example SOP are contained in the appendix of this document.

A minimum of two operators are required to carry out the scan. Local procedures need to be developed regarding working practices to safely minimise PPE changes while maintaining required standards of infection control. For example, this may involve using a radiology department assistant (RDA) to act as chaperone.

Post Procedure

When venting at the end of the test, check insufflator machine manufacturer's guidance: most have fluid/droplet filters making this safe. If not venting via tubing, once the insufflator is switched off, a pause of few minutes should be carried out to allow the bowel to decompress prior to removing the tube.

Ensure an infected waste bin is in close proximity to the scan table for ease of disposal once extubated. The catheter should be withdrawn from the patient initially and then disconnected from the machine. It should then be disposed of immediately into a bag (along with outer gloves), which is then sealed.

As per routine practice, it is optimal for the team performing CTC to identify cancers at the time of examination and perform completion CT staging at the same attendance. In the current climate the team performing the CTC should also be trained to review the lung bases for changes which may represent Covid-19 infection. If changes of Covid-19 infection are present at the lung bases a radiologist should review the scan immediately to determine whether additional room cleaning may be needed as per local processes.

Sites could consider audit of the frequency of patients with Covid-19 changes on the lung bases at CTC.

Appendix

These are example SOP from two CTC centres; these should be amended to suit the local working environment:

Example 1 – Two radiographers

Before performing CTC:

1. *Ensure staff have adequate stock of PPE ready in the CT Control Room prior to the patient arrival and also for removal of patient from scanner (apron, gloves, surgical masks, visor)*
2. *The team should confirm the insufflator is in working order with correct insufflation tubes and spare CO₂ gas cylinders. Departments should check their own insufflator machine and tubing manufacturer's guidance: most have fluid/droplet filters reducing the risk of contamination*
<https://www.bsgar.org/society/covid-19-and-bsgar-updates-1/>
3. *Two radiographers are required to perform the scan.*
4. *Both radiographers to hand sanitise, don clean Level 1 PPE (as above) in the CT control room prior to entering the CT scanner room.*
5. *Radiographer 1 wearing clean Level 1 PPE to bring patient into CT scanner room from changing room. Patient to be shown toilet prior to entering the room. Radiographer 2 waits in the CT scanner room with clean Level 1 PPE to act as chaperone. Patient ID, consent and cannulation to be performed in the room. Safety questionnaires to be completed and signed by the radiographer on behalf of the patient*

Performing insufflation and the CT scan:

6. *Radiographer 1 inserts the rectal tube. Once the tube is safely in position, place a large incontinence pad over the patient's buttocks/tube and close patient's gown to minimise risk of spillage/incontinence and place the infected waste bin close to the scanner for easy disposal of the tube. After insufflation, position the patient supine if not already*

Whilst still in the scan room:

- *Radiographer 1 doffs PPE in an approved manner.*
- *Radiographer 1 washes hands thoroughly, dries and places paper towels in clinical waste bin.*
- *Both radiographers exit scan room: Radiographer 1 to CT control room, Radiographer 2 to stand in demarcated area outside scan room still in Level 1 PPE (this should be changed as instructed above if soiled)*
- *Alcohol Gel hands thoroughly.*

- Radiographer 1 to scan the patient and review the colon, extracolonic area paying particular attention to lung bases for Covid-19 changes.
 - If the need arises to check the rectal tube or alter insufflation this can be done by radiographer 2.
7. Radiographer 2 to remain in demarcated area. Once the first scan is complete the scan is checked for perforation and cancer. Radiographer 2 repositions patient for second scan position. Consider not scanning in the prone position, instead do a lateral decubitus if patient factors make prone position difficult, or if the patient is significantly incontinent of gas, or immobile. CTC trained radiographers should be confident to make decisions about patient positioning and modify techniques in line with agreed protocols. They should be adequately trained and assessed as competent in line with local and professional body training standards.
 8. Once the scan is complete and before the patient leaves the scanner room, if appropriate, radiographer 1 checks the scan for the presence of cancer which would indicate completion CT staging, and for changes of Covid-19 in the lungs (see post procedure above)
 9. Once the scan is complete Radiographer 2 turns off the insufflator (if left on) and waits a few minutes to allow the bowel to decompress prior to removing tube using the machines in built vent capacity. When removing tube, removes both ends at the same time, placing directly into clinical waste, along with top layer of gloves (2nd pair underneath) (double bagging clinical waste) and directs patient to toilet. Once finished in the toilet patient will wait in the changing room.
 10. Once the patient has left the scan room:
 - Whilst still in the scan room, remove gloves carefully and place in clinical waste bin
 - Wash hands thoroughly and dry, place paper towels in clinical waste bin, or alcohol gel inside pair of gloves if wearing double gloves
 11. Put on clean gloves before cleaning scanning equipment in accordance with local policy.
 12. Remove gown and gloves and places in clinical waste bin
 13. Remove surgical mask by untying or break bottom ties, followed by top ties or elastic, and remove by handling the ties only and discard as clinical waste
 14. Wash hands thoroughly
 15. Double bag and secure clinical waste bag with swan tie and put in waste collection area
 16. Wash hands thoroughly
 17. Guided by local infection control agreements and air flow rate change per CT room a member of staff dons clean PPE in the control area and enters the changing room to remove the patient's cannula

18. *Patient is asked to dress and leave the changing room ensuring they feel well and have information on post procedure instructions including where to sanitise their hands and getting their results.*
19. *Ensure toilet and changing rooms have an enhanced clean before use. Equipment cleaning between cases is expected, with enhanced cleaning episodes planned during the scan day (e.g. after a batched list of CTC cases).*

Example 2 - Radiographers and HCA/RDA

Before the test:

1. Patient receives surgical mask at reception desk, and is directed to the waiting area.
2. HCA dons locally-approved PPE for <2m patient contact (surgical mask, gloves, plastic apron) and shows the patient to the changing area.
3. Patient changes into gown and dignity shorts and waits in changing area.
4. During 2-3, Radiographers confirm equipment available and in working order; insufflation kits, contrast, cannulation kit, spasmolytics etc laid out and prepared. Radiographer 1 (“contact”) waits in scanning room, Radiographer 2 (“clean”) moves to control room.
5. Original HCA brings patient to CT scanning room, where Radiographer 1 (“contact”) has already donned PPE (as above but with visor, double gloved, and at our site wearing a full arms-covering gown) and meets patient.

During the test:

6. Consent and checklists completed with radiographer and patient (some checklists can be completed in the waiting or changing area e.g. Buscopan, IV contrast).
7. Cannulation by Radiographer 1, assisted by HCA if appropriate.
8. Buscopan administered.
9. Insufflation tube inserted as per above SOP – HCA acting as chaperone.
10. Patient positioned supine, connected to IV contrast pump.
11. Radiographer 1 removes outer gloves, alcohol gel to inner glove layer, then clean set of gloves, leaves scanning room with HCA and stands in demarcated area (either a separate area in the control room or outside the CT scanning room in the corridor as per above).
12. Radiographer 2 (“clean”) operates the scanner and performs scouts. If all OK, proceed to scan. Radiographer 1 to re-enter scan room, inform patient, watch contrast infusion proceeding normally (if needed per local practice). Then Radiographer 1 leaves scanner room and stands in demarcated area.
13. Radiographer 2 checks supine scan for adequacy and decides on optimum position for the second scan (+/- chest for staging).

14. Radiographer 1 re-enters room and positions patient for the second scan as per Radiographer 2 instructions, removing the connection to IV contrast and performing additional insufflation at the same time if required.
15. Radiographer 1 leaves the room as above and stands in demarcated area.
16. Radiographer 2 re-scouts and performs second scan.
17. Radiographer 2 confirms scan adequacy and completion.
18. Radiographer 1 re-enters the CT scanning room, checks patient, removes tube as per above SOP, to clinical waste.
19. Radiographer 1 shows patient to scan exit; met by HCA (wearing patient contact PPE i.e. no visor etc) who shows patient to toilet.

After the test:

20. Radiographer 1 remains in scan room having “handed over” patient to the HCA; cleans scanning equipment, contrast pump, insufflator, door handles etc. Doffs in room and disposes of PPE. Demarcated area cleaned per local protocol (can be by Radiographer 1 as they exit the CT scanning area).
21. HCA takes patient from toilet to waiting area. HCA removes cannula after 15 mins / per departmental protocol.
22. HCA cleans toilet area.

After each list:

23. Full clean of CT scanning room, demarcated area, and toilet facilities.

Radiographer 1 and 2 can swap for each case if needed. This minimises use of PPE since only Radiographer 1 needs to be in “full” PPE (visor, gown, double gloves). Radiographer 2 essentially just helps with setup in the room before the patient arrives, then drives the scanner. HCA can be “floating” and only needs basic 2m patient contact PPE as per local policy.

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